

Claims

1. A composite structural reinforcement device to be applied to a structural member in a plurality of overlying layers, comprising

a first elongate generally planar ply formed of a high tensile strength material impregnated with a curable resin, said first ply having a longitudinal axis and first and second edges;

a second elongate generally planar ply formed of a high tensile strength material impregnated with a curable resin, said second elongate ply having a longitudinal axis and first and second edges, said second ply disposed in overlying relation to said first ply with said longitudinal axes and said edges of said plies in alignment; and

an elongate generally planar detectable ply formed of magnetically detectable material, said detectable ply having a longitudinal axis and first and second edges, said detectable ply disposed and interconnected between said first and second plies with said first and second edges of said detectable ply in mutual alignment with said first and second edges of said first and second plies;

said plies bonded together to form a continuous elongate body having a longitudinal axis parallel to said longitudinal axes of said plies, having an upper face and a lower face, and having first and second edges.

2. The composite structural reinforcement device of Claim 1, wherein said detectable ply comprises an open mesh formed of a ferrous metal.

3. The composite structural reinforcement device of Claim 1, wherein said detectable ply comprises a thin sheet of ferrous metal.

4. The composite structural reinforcement device of Claim 3, wherein said sheet is penetrated by a plurality of perforations.

5. The composite structural reinforcement device of Claim 1, wherein said detectable ply comprises a plurality of thin narrow bands of ferrous metal disposed in spaced relation between said first and second plies.

6. The composite structural reinforcement device of Claim 1, wherein said detectable ply comprises a multiplicity of discrete particles of magnetically detectable material disposed between said first and second plies.

7. The composite structural reinforcement device of Claim 1, further comprising interlock means formed on said upper face and said lower face of said body for the purpose of forming a mechanical interlock between said faces during application of the device to a structural member.

8. The composite structural reinforcement device of Claim 7, wherein said interlock means comprises a multiplicity of serrations formed in said upper face and in said lower face of said body between said edges thereof in generally perpendicular relation to said longitudinal axes of said plies.

9. The composite structural reinforcement device of Claim 1, further comprising alignment means for the purpose of aligning successive layers of the device during application of the device to a structural member.

10. The composite structural reinforcement device of Claim 9, wherein said alignment means comprises a longitudinal groove extending into said body from one of said faces thereof and extending along said body parallel to said longitudinal axis thereof, and a matching longitudinal projection extending outwardly from the other of said faces thereof and extending along said body

parallel to said longitudinal axis thereof directly opposite said groove, so that said projection is received in said groove as the device is applied in overlying layers to a structural member.

11. The composite structural reinforcement device of Claim 10, wherein a first said alignment means is disposed in proximity to said first edge of said body, and wherein a second said alignment means is disposed in proximity to said second edge of said body.

12. A composite structural reinforcement device to be applied to a structural member in a plurality of overlying layers, comprising

a continuous elongate body formed of high tensile strength material impregnated with a curable resin, said body having a longitudinal axis, having an upper face and a lower face, and having first and second edges; and

interlock means formed on said upper face and said lower face of said body for the purpose of forming a mechanical interlock between said faces during application of the device to a structural member.

13. The composite structural reinforcement device of Claim 12, wherein said interlock means comprises a multiplicity of serrations formed in said upper face and in said lower face of said body between said edges thereof in generally perpendicular relation to said longitudinal axis of said body.

14. The composite structural reinforcement device of Claim 13, further comprising alignment means for the purpose of aligning successive layers of the device during application of the device to a structural member.

15. The composite structural reinforcement device of Claim 14, wherein said alignment means comprises a longitudinal groove extending into said body from one of said faces thereof and

extending along said body parallel to said longitudinal axis thereof, and a matching longitudinal projection extending outwardly from the other of said faces thereof and extending along said body parallel to said longitudinal axis thereof directly opposite said groove, so that said projection is received in said groove as the device is applied in overlying layers to a structural member.

5 16. The composite structural reinforcement device of Claim 12, further comprising magnetic detection means formed of magnetically detectable material interconnected to said body.

~~17. A composite structural reinforcement device to be applied to a structural member in~~
a plurality of overlying layers, comprising

~~a continuous elongate body formed of high tensile strength material impregnated with a curable resin, said body having a longitudinal axis, having an upper face and a lower face, and having first and second edges; and~~

~~alignment means formed on said upper face and said lower face of said body for the purpose of aligning successive layers of the device during application of the device to a structural member.~~

15 18. The composite structural reinforcement device of Claim 17, wherein said alignment means comprises a longitudinal groove extending into said body from one of said faces thereof and extending along said body parallel to said longitudinal axis thereof, and a matching longitudinal projection extending outwardly from the other of said faces thereof and extending along said body parallel to said longitudinal axis thereof directly opposite said groove, so that said projection is received in said groove as the device is applied in overlying layers to a structural member.

20 19. The composite structural reinforcement device of Claim 18, further comprising interlock means having a multiplicity of serrations formed in said upper face and in said lower face

of said body between said edges thereof in generally perpendicular relation to said longitudinal axes of said plies, for the purpose of forming a mechanical interlock between said faces during application of the device to a structural member.

20. The composite structural reinforcement device of Claim 17, further comprising
5 magnetic detection means formed of magnetically detectable material interconnected to said body.

~~21.~~ A composite structural reinforcement device to be applied to a structural member in a plurality of overlying layers, comprising

a continuous elongate body formed of a high tensile strength material impregnated with a curable resin, said body having a longitudinal axis, having an upper face and a lower face, and having first and second edges; and

magnetic detection means formed of magnetically detectable material interconnected to said body.

22. The composite structural reinforcement device of Claim 21, wherein said magnetic detection means comprises a multiplicity of particles of magnetic material attached to at least one of said faces of said body.

23. The composite structural reinforcement device of Claim 21, wherein said magnetic detection means comprises a multiplicity of particles of magnetic material embedded within said body.

24. The composite structural reinforcement device of Claim 21, wherein said high tensile
20 strength material is formed of fibers and wherein said magnetic detection means comprises fibers of magnetically detectable material intermixed with said fibers of said high tensile strength material.

25. The composite structural reinforcement device of Claim 21, wherein said magnetic detection means comprises a ply of magnetically detectable material bonded to at least one of said faces of said body.

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